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(54) EMERGENCY FIRE-EXTINGUISHING DEVICE

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Reference Cited:

Japanese Kokoku Patent No. Sho  
51[1976]-7300

[There are no amendments to this patent.]

### Claim

An emergency fire-extinguishing device, characterized by the fact that in an outflow pipe passage of a sealed bomb in which a fire-extinguishing gas and a fire-extinguishing liquid are housed, a permanent magnet is installed in a support installed in a detection box; a cylindrical detecting body is adsorbed and hung onto its lower surface; an operating metal plate is coupled with the detecting body; the other end of the operating metal plate is coupled with a rotary segment installed at the shaft of an opening valve disposed in the outflow pipe passage; the outflow pipe passage is opened by rotating the shaft by the drop of the detecting body; and the fire-extinguishing gas and the fire-extinguishing liquid are discharged to the outside.

### Detailed explanation of the invention

In the present invention, a bomb in which a fire-extinguishing gas and a fire-extinguishing liquid are included is installed in advance in a room, etc., and a vibration detecting mechanism, which is operated by detecting movements when the bomb is inclined or turned over, along with an opening valve being opened by such, are installed. When a fire breaks out or is likely to break out, the device is operated by abnormal vibration, and the internal fire-extinguishing agent is dissipated, so that the fire is extinguished or prevented.

The present invention is explained by the figures. In Figure 1, for example, a fire-extinguishing gas such as Freon gas and carbonic acid gas is housed in a bomb A, a manual cock B is installed at its gateway, and an opening valve mechanism C operated by detecting vibration is installed.

When the fire-extinguishing agent is liquid, the outlet pipe is extended to the lower part of the bomb, pressed by a gas from the top, and jetted out.

Also, a pipe P is extended by an appropriate length, and the above-mentioned opening valve mechanism C may also be installed in its halfway position.

As the gas, a Freon gas is optimum; this gas has a fire-extinguishing action at a density to the degree that it is not harmful onto the human body, even if it is dissipated into the air.

As the opening valve mechanism, a mechanism as shown in Figures 2, 3, and 4 is appropriate.

In other words, a permanent magnet 2 is fixed into a support 3 of a detection box 1, and a cylindrical detecting body 4 is adsorbed and hung to it. The cylindrical detecting body 4 is adsorbed onto a wide surface of the permanent magnet 2, hung in a stable state, and is not operated until sensing vibration. However, if the vibration exceeds a certain limit, the detecting body is operated. Thus, there is no erroneous operation, and the weight and the centroid can be freely designed according to the size of the cylinder diameter, the cylinder length, etc. For example, its operation is much more reliable than that of a spherical detecting body. The

detecting body is coupled with an operating metal plate 5, with an extended segment 6 of the operating metal plate being installed in a freely rotating way at the back plate of the detection box. A rotary segment 11, which is installed via a spring 10 at a shaft 9 of a cock 8 (a state shown in Figure 3) that is installed in a pipe P' and is normally closed, is latched to a protruding latch segment 7 installed at the extended segment.

If the detecting body 4 is separated so that it is not influenced by the adsorption [attraction] power of the permanent magnet 2 and dropped due to vibration, the operating metal plate 5 and the extended segment 6 descend; at that time, the rotary segment 11 is shifted and opens the cock 8 by rotating the shaft 9 by 90°. 12 is a handle, installed at the upper side of the shaft 9, and operates as a return mechanism for closing the cock to return to the original state.

Also, as shown in Figure 5, the pipe passage from the bomb is branched into two parts. The opening valve mechanism C is installed at its one side X, and a fuse plug D melted by heat is installed at the other side Y. In this constitution, even when a fire breaks out without turnover by vibration, a gas, etc., are discharged from the side Y, and the fire is extinguished.

Next, the effects of the present invention are mentioned. When the fire-extinguishing agent is a gas, as the effects, if this device is fixed on a floor, the gas is dissipated in an emergency, so that the fire is extinguished.

For example, in the past when a propane bomb was turned over, a fire often broke out; however, if this fire-extinguishing device is installed in the propane bomb, they are turned over together, so that the gas is discharged, thereby being effective for extinguishing a fire.

Also, when a fire breaks out and people escape, if this device is brought down before the escape, the fire can be extinguished without the accompanying danger.

In particular, if a fire is likely to break out due to an earthquake, etc., this device is automatically and rapidly operated due to the vibration, the gas is discharged to prevent a fire before breaking out, and since the fire-extinguishing gas is diffused up to the corners of a room, its efficiency is very good. Also, since the gas is expanded before a fire breaks out, it is suitable for preventing a fire.

Next, when the fire-extinguishing agent is a liquid, as the effects, since the cock is automatically opened at the time of an earthquake, etc., the outlet of the fire-extinguishing agent is brought up to the combustion part of the device, and it is directly jetted onto it, so that a fire can be extinguished.

It is suitable for emergency fire extinguishing of boilers, central heating systems, etc., using petroleum fuel, etc., for instance.

Thus, when this device is installed in places (for example, cooking sites) where a fire is started, as in ordinary homes, hospitals with little manpower, unmanned storages sites, large buildings, etc., it can be utilized as an effective fire-extinguishing and fire-preventing device.

### Brief description of the figures

Figure 1 shows an applied state of the present invention.

Figure 2 is a front view showing a vibration operating [-operated] mechanism (part of the cover is cut, and its inside is shown).

Figure 3 is a side view of Figure 2 and shows its partial cross section.

Figure 4 is an oblique view showing an operation state of the mechanism shown in Figures 2 and 3.

Figure 5 shows an applied state when a temperature sensor is used together.

- A Bomb
- B Manual cock
- C Opening valve mechanism
- D Fuse plug
- 1 Detection box
- 2 Permanent magnet
- 3 Support
- 4 Detecting body
- 5 Operating metal plate
- 6 Extended segment
- 8 Cock
- 11 Rotary segment

Figure 1

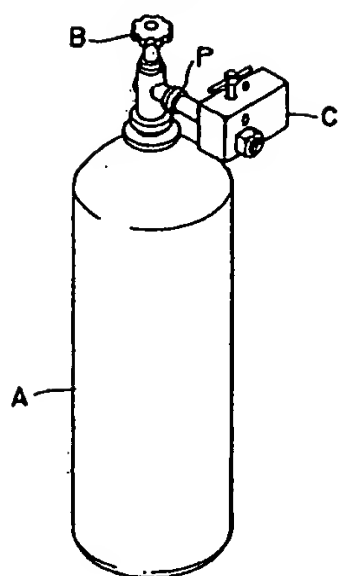


Figure 2

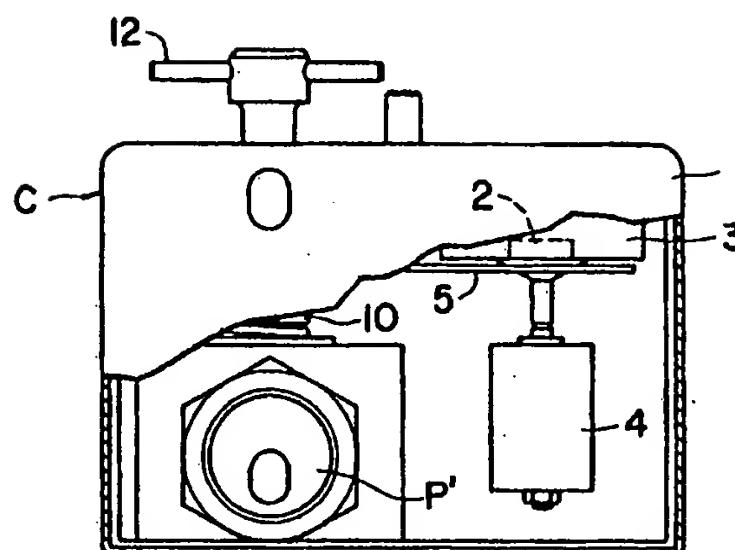


Figure 3

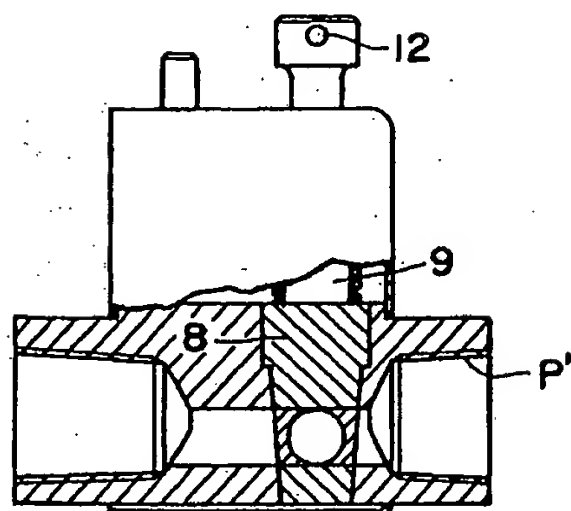


Figure 4

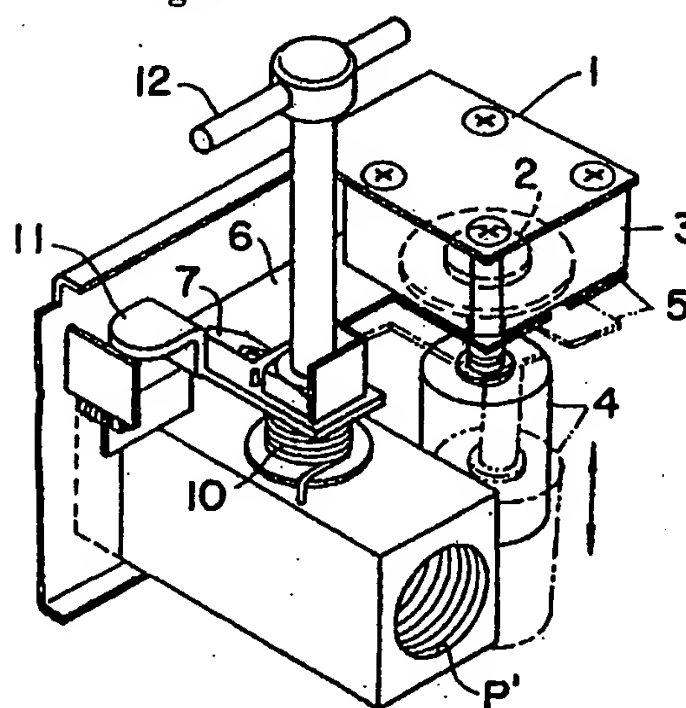
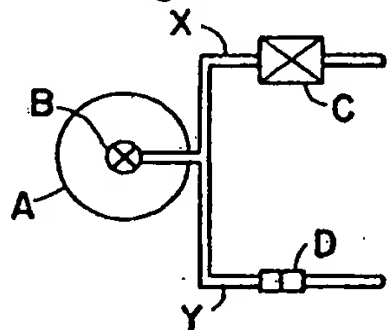


Figure 5



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特許公報

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7612-25

発明の数 1

(全 3 頁)

1

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⑮緊急用消火装置

⑯特 願 昭47-19552  
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㉒特許請求の範囲

1 消火ガス、消火液を収納した密閉ポンベの流  
出管路中に、検知函内に設けた支持体内に永久磁  
石をとりつけ、この下面に円筒形の検知体を吸着  
吊下げ、この検知体に作動板を係合させ、この作  
動板の他端を流出管路中に配設する開放弁の軸に  
設けた回動片に係合させ、検知体の落下によりそ  
の軸を回動して流出管路を開放し、消火ガス、消  
火液を外部に流出させるようにした緊急用消火装  
置。

発明の詳細な説明

この発明は室内、屋内等にあらかじめ消火ガス、  
消火液を入れたポンベを設置しておき、このポン  
ベが傾いたり転倒したりしたときに、その動きを  
感知して作動する振動検知機構とそれによつて開  
く開放弁をとりつけ、火災の発生や発生のおそれ  
のあるときに異常振動により作動して内部の消火  
剤が放散され消火、防火に当ることを目的とする。

これを図について説明すると第1図においてた  
とえばフロンガス、炭酸ガス等の消火ガスをポ  
ンベA内に収容し、この出入口には手動コックB  
を設けると共に、振動を検知して作動する開放弁  
機構Cを設ける。

消火剤が液体の場合は出口管をポンベ下部まで

延長し、上部よりガス体で圧して噴出するようになす。

なお管Pは適宜の長さのばし、前記開放弁機構Cをその途中に設けてもよい。

5 ガス体はフロンガスが最適で、これは空気中に放散されても人体に害がない程度の濃度で消火作用がある。

開放弁機構としては第2, 3, 4図に示すような機構が適当である。

すなわち検知函1の支持体3内に永久磁石2を固定し、これに円筒形の検知体4を吸着吊下する。この円筒形の検知体4は、広い面で永久磁石2に吸着されて安定した状態で垂下保持され一定の振動以上になるまでは作動しないが、その限界を超えたと必ず作動する特長を有するので誤作動がなく、重量および重心の設定が筒径の大小、筒体の長さなどによつて自由に設計でき、たとえば球体の検知体に比してはるかに作動が確実である。この検知体に作動板5を係合させ、この作動板の延設片6を検知函後板に廻動自在にとりつけ、延設片に設けた隆起係止片7に、管P内に設けた常時は閉止されているコック8(第3図示の状態)の軸9にばね10を介してとりつけた回動片11を係止させる。

振動によつて検知体4が永久磁石2の吸着力をはなれ落下すると作動板5および延設片6は下がり、その際回動片11がはずれ軸9を90度廻転させコック8を開く。12はハンドルで軸9上方にとりつけコックを元に閉すための復帰機構である。

また第5図に示すように、ポンベからの管路を二つに分岐して、その一方Xにこの開放弁機構Cをとりつけ、他方Yに熱によつて溶融するヒューズプラグDをとりつけておけば、たとえ振動によつて転倒せずに火災になつた場合にもYよりガスなどが流出して消火に役立つ。

つぎにこの発明の効果をのべると、消火剤がガ

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ス体の場合の効果としてはこの装置を床上に固定しておけば緊急の際にガス体が放散されて消火に当る。

たとえば昨今、プロパンボンベが転倒したときに引火する事故がしばしばであるが、プロパンボンベにこの消火装置をとりつけておけば、一しよに転倒してガスを放出して消火に有効である。

また火災が発生して人が逃げる際に、この装置を倒してから避難することによつて危険を伴わずに消火することもできる。

とくに地震などによつて火災の発生のおそれがあるときは、その振動によつて自動的に逸早く作動してガスを放出し出火前の防火にも役立ち消火ガスは室内の隅々にまで拡散するので非常に効率がよく、また火災発生前に拡がるので防火に適する。

つぎに消火剤が液体の場合の効果としては地震などの時にコックが自動的に開くので、消火剤の出口を燃焼器機の燃焼部分まで配管しておき、そこに直接噴出させることにより消火することができ

る。これはたとえば石油燃料などを用いているボイラー、セントラルヒーティング装置などの緊急消火に適している。

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このように本装置は一般家庭の防火、火災をはじめとして営業用に火を扱う個処、(例えば調理場) 人手の少ない病院、無人の倉庫、大きな建築物等に設置してまことに有効な消火、防火設備となる。

#### 図面の簡単な説明

第1図はこの発明の実施状態を示す図、

第2図は振動作動機構の正面図(カバー一部を切欠き内部を示す)

第3図は第2図の側面図で一部を断面によつて示す。

第4図は第2図、第3図に示す機構の作動状態を斜視図によつて示す。

第5図は温度感知器と併用した場合の実施状態を示す図である。

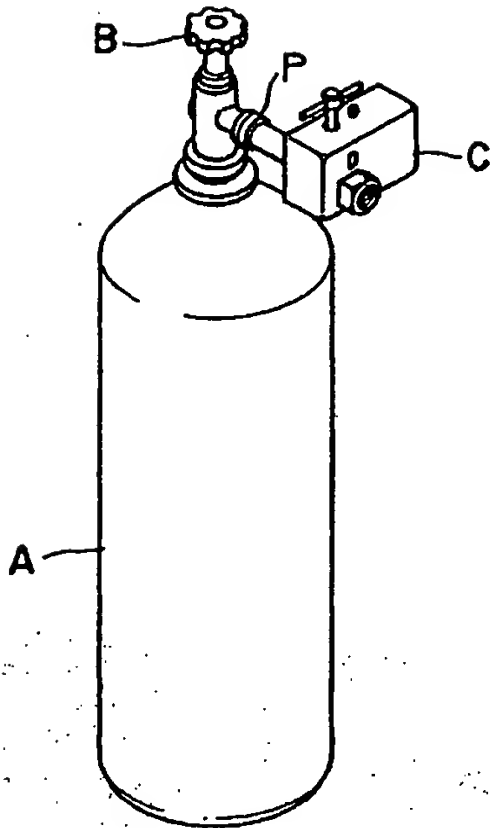
A……ボンベ、B……手動コック、C……開放弁機構、D……ヒューズプラグ、1……検知函、2……永久磁石、3……支持体、4……検知体、5……作動板、6……延設片、8……コック、11……回動片。

#### ⑤引用文献

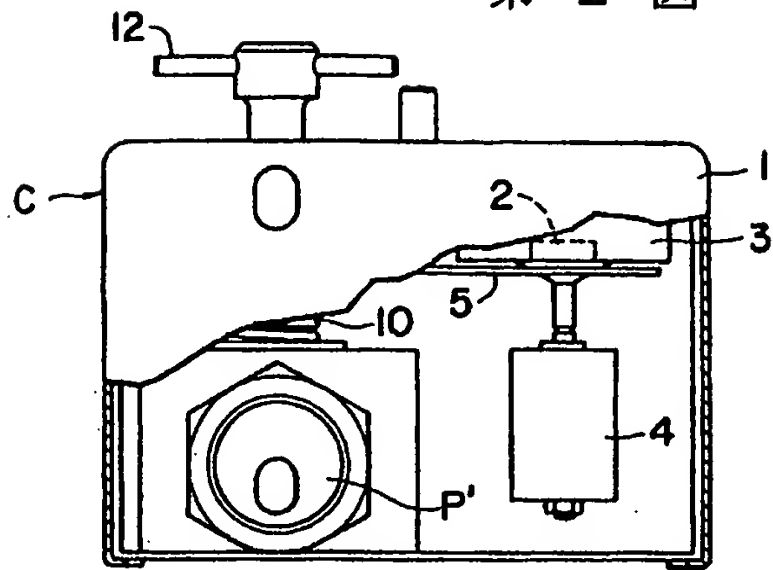
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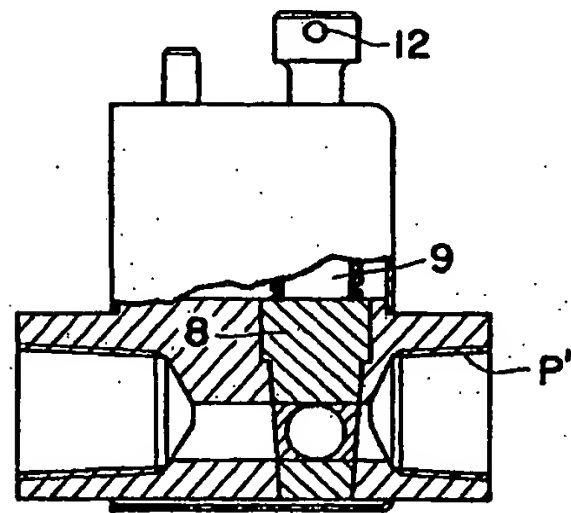
第 1 図



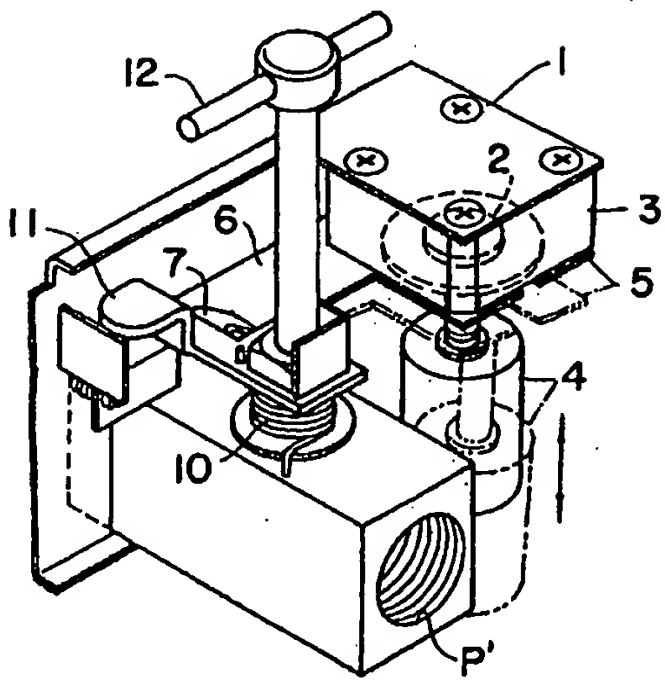
第 2 図



第 3 図



第 4 図



第 5 図

